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(71) Applicant:

Martur Sünger ve Koltuk Tesisleri Tic. San. A.S.  
(Martur Co. Inc.)  
Günesli, İstanbul (TR)

(72) Inventor: Üstünberk, Umur  
Corlu (TR)

(74) Representative:  
Robba, Pierpaolo et al  
Interpatent,  
Via Caboto 35  
10129 Torino (IT)

### (54) A headrest for motor vehicle seats, provided with means for a quick height adjustment

(57) A headrest (1) for motor vehicle seats, having a frame formed with two fixed tubular lateral uprights (3) secured to the headrest (1) and adapted to slidably receive two support rods (5) integral with and protruding from the seatback (7), wherein the rods (5) are provided with notches (9) adapted to completely accommodate the thickness of the wire springs (11), and wherein there are provided means (17, 25, 31) operated from outside the headrest for acting on the laterally projecting ends (21) of the wire springs (11) to spread the spring arms apart and disengage the uprights (3) from the rods (5).

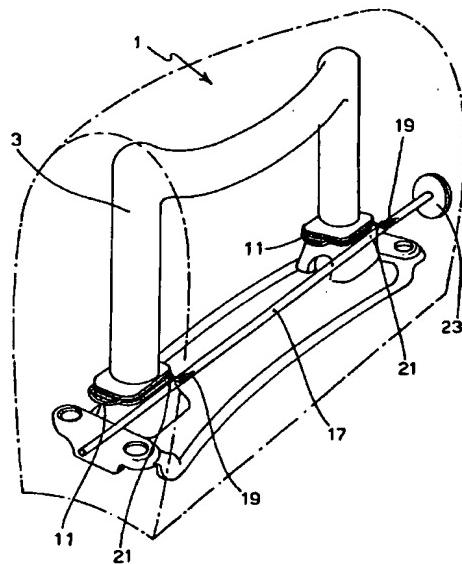


FIG. 1

**Description**

The present invention relates to a headrest for motor vehicle seats, provided with means for a quick height adjustment.

It is known that presently, in some types of motor vehicles, the height adjustment of the headrest is accomplished by moving such headrest with respect to fixed support rods projecting upwardly from and secured to the seatback.

Such adjustment is achieved by engaging at the desired position notches and projections formed on the rods and on slide guides, respectively, such engagement being firmly locked through elastic means, such as C-shaped springs, disposed in correspondence thereof.

Frequently the user is not aware of the existence of such elastic means and above all he/she does not know how to operate such adjustment and fixing means.

Therefore the mode of use of this system is not apparent at all, which is a remarkable drawback in the user's view.

It is an object of the present invention to overcome such drawback, by providing a headrest that appears similar to the above described known headrests, and in which the means for operating the adjustment and locking means are immediately evident and easy to be used. Such headrest, that is easily to be accessed and operated because of its simplicity, allows to obtain lower costs with respect to the prior headrests so that it can be fitted to motor vehicles of the lower price segment, that in turn can meet the safety requirements of the laws in force.

This object is achieved through a headrest for motor vehicle seats as claimed in claim 1.

The headrest according to the invention comprises a cushion containing a rigid load bearing frame formed with two fixed tubular lateral uprights secured to said headrest and adapted to slidably receive two support rods secured to and projecting from a seatback, said rods being provided with spaced notches for engaging and locking said uprights through a C-shaped wire spring in each of said tubular upright fitting into a desired notch through a slit formed near the end of the base of said uprights, and is characterised in that said notches are formed as recesses having a depth at least equal to the thickness of the wire forming said springs and completely accomodating an arm of said wire spring, and in that said headrest comprises at least one operating rod provided with an outer push-button for axially moving said operating rod to spread apart the arms of said wire spring and disengage said uprights from said rods, whereby the headrest can slide along the rods until it reaches a desired position where it is locked by releasing the push-button(s).

According to a first embodiment of the invention, the headrest comprises a single transverse rod provided with two projections each abutting against a corresponding laterally projecting end of the wire springs.

According to another embodiment of the invention, the headrest comprises two operating rods laterally disposed with respect to said headrest, each rod acting with a free end onto a laterally projecting end of said wire springs and being further provided with a push-button laterally protruding outside the headrest.

According to another embodiment of the invention, the headrest comprises two operating rods located rearwardly of said headrest and provided with operating push-buttons projecting at the rear of said headrest for acting on the laterally projecting ends of the wire springs along a direction orthogonal to the headrest frame, and the arms of said wire springs, the axes of said notches, and said passage slits all extend transversely to said frame.

The invention will now be described with reference to some non limiting embodiments illustrated in the attached drawings in which:

Fig. 1 is a schematic perspective view of the frame of a headrest in accordance with a first embodiment of the present invention;

Fig. 2 is a cross section view taken along lines II-II of Fig. 1 and showing the notches provided on the support rods; and

Fig. 3 is a schematic plan view of a second embodiment of the present invention;

Fig. 4 is a schematic plan view of a third embodiment of the present invention.

As clearly shown in Fig.s 1 and 2, the headrest 1 comprises, in a generally conventional way, a resilient body or cushion usually made of foamed plastic material and provided with an outer covering, and containing a rigid load bearing frame formed with two fixed tubular lateral uprights 3 secured to the headrest 1 and adapted to slidably receive two support rods 5 secured to and projecting from a seatback 7. The frame further comprises an upper cross piece joining the lateral uprights 3 of the frame. In the illustrated embodiments the rods 5 have a circular cross section.

Properly spaced notches 9 are provided on the rods 5 for locking at the selected position the tubular uprights 3, through wire springs 11 that comprises a substantially C-shaped metal member with an end portion 21 laterally projecting from one of the arms.

More precisely, each upright 3 is locked to a rod 5 by fitting a wire spring 11 into a desired notch 9 through a passage slit 13 formed near the end of the base 15 of each tubular upright 3.

The notches 9 are formed as recesses having a depth at least equal to the thickness (or in case the diameter) of the wire forming the spring 11. Thus each notch 9 is adapted to completely accomodate an arm of the spring 11 and prevent it from coming out of the notch, unless properly designed displacing means are being used to this aim.

Such displacing means can spread apart the arms

of the springs 11 so that the spring arms received in the seat formed by the notches 9 are moved outside of the notches, thus allowing the tubular uprights 3 to slide with respect to the fixed support rods 5.

According to a first embodiment of the invention, such displacing means comprises a transverse rod 17 provided with projections 19 abutting against the laterally projecting ends 21 of the wire springs 11. The rod 17 is movable along its axis and is provided with an outer push-button 23 for actuating (i.e. pushing) the rod. When the transverse rod 17 is laterally moved by pushing the button 23, the projections 19 urge the projecting ends 21 of the spring 11 to "open", i.e. to spread the spring arms apart, thus disengaging the uprights 3 from the rods 5. The headrest 1 can now slide along the rods 5 until it reaches the desired position where it is firmly secured or locked by releasing the push-button 23. This causes the elastic return of the arms of the wire springs 11 into the notches 9 that are located at the desired height, through the passage slits 13 in the base 15 of the upright 3.

A second embodiment of the invention, illustrated in Fig. 3, is similar to the first embodiment, but for the provision of two (shorter) operating rods 25, laterally disposed with respect to the headrest 1, each rod acting with a free end 27 onto the projecting end 21 of a wire spring 11. Each rod 25 is further provided with a push-button 29 laterally projecting outside the headrest.

When both push-buttons 29 are simultaneously pressed the arms of the wire springs are spread outwardly and the uprights 3 are disengaged from the rods 5, whereby the headrest can now slide along the rods 5 for being positioned at a desired location and being locked there by releasing the push-buttons 29. This way the arms of the wire springs elastically return into the notches 9 on the fixed rods 5 through the passage slits 13.

A third embodiment illustrated in Fig. 4 is similar to the second embodiment, and differs in that the two operating rods 31 are located at the rear of the headrest 1 for acting on the projecting ends 21 of the wire springs 11, i.e. acting along a direction orthogonal to the headrest frame.

Consequently the arms of the wire springs 11, the axes of the notches 9 on the rods 5, and the passage slits 13 on the uprights 3 all extend transversely to the frame (or to the headrest). In other words, they are rotated by 90° with respect to the first and second embodiments, and the operating push-buttons 33 project at the rear of the headrest 1.

By simultaneously pressing on both push-buttons 33 the arms of the wire springs are spread apart and the uprights 3 are disengaged from the rods 5, whereby the headrest can now slide along the rods 5 for being positioned at a desired location and being locked there by releasing the push-buttons 33. This way the arms of the wire springs return into the notches 9 on the fixed rods 5 through the passage slit 13.

It is evident that the invention is not limited to the described and illustrated embodiments, and that modifications and changes can be made that comes within the scope of the present invention.

### Claims

1. A headrest (1) for motor vehicle seats, comprising a cushion containing a rigid load bearing frame formed with two fixed tubular lateral uprights (3) secured to said headrest (1) and adapted to slidably receive two support rods (5) secured to and protruding from a seatback (7), said rods (5) being provided with spaced notches (9) for engaging and locking said uprights (3) through a C-shaped wire spring (11) in each of said tubular upright (3) fitting into a desired notch (9) through a slit (13) formed near the end of the base (15) of said uprights (3), characterised in that said notches (9) are formed as recesses having a depth at least equal to the thickness of the wire forming said springs (11) and completely accommodate an arm of said wire spring (11), and in that said headrest (1) comprises at least one operating rod (17; 25; 31) provided with an outer push-button (23; 29; 33) for axially moving said operating rod (17; 25; 31) to spread apart the arms of said wire spring (11) and disengage said uprights (3) from said rods (5); whereby the headrest (1) can slide along the rods (5) until it reaches a desired position where it is locked by releasing said push-button(s) (23; 29; 31).
2. A headrest (1) according to claim 1, characterised in that it comprises a single transverse rod (17) provided with two projections (19) each abutting against a corresponding laterally projecting end (21) of the wire springs (11).
3. A headrest (1) according to claim 1, characterised in that it comprises two operating rods (25) laterally disposed with respect to said headrest (1), each rod acting with a free end (27) onto a laterally projecting end (21) of said wire springs (11) and being further provided with a push-button (29) laterally projecting outside the headrest (1).
4. A headrest (1) according to claim 1, characterised in that it comprises two operating rods (31) located at the rear of said headrest (1) and provided with operating push-buttons (33) protruding at the rear of said headrest (1) for acting on the laterally projecting ends (21) of the wire springs (11) along a direction orthogonal to the headrest frame, and in that the arms of said wire springs (11), the axes of said notches (9), and said passage slits (13) all extend transversely to said frame.

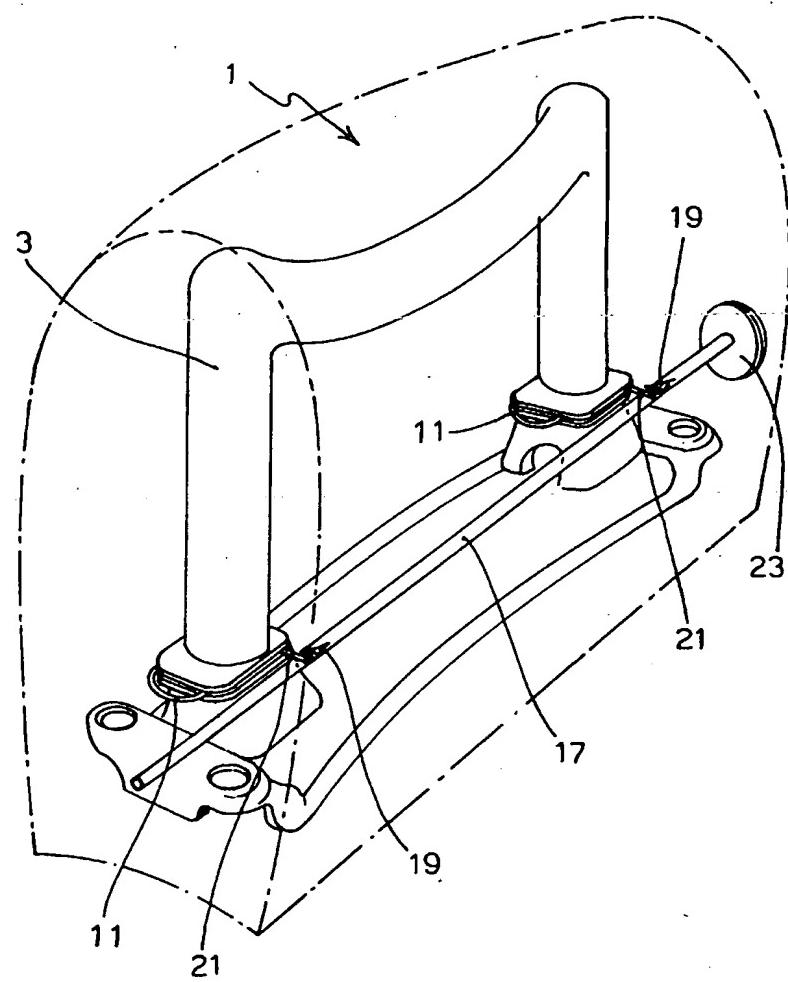


FIG. 1

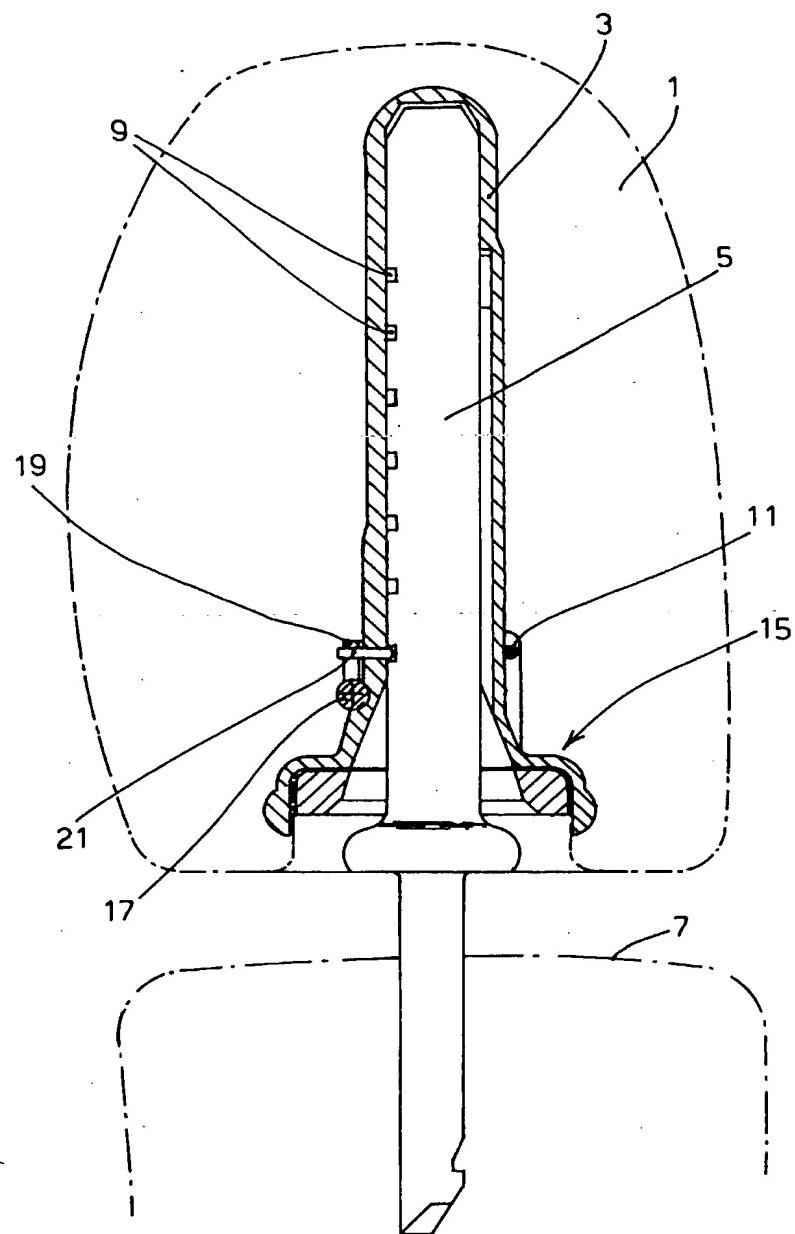


FIG. 2

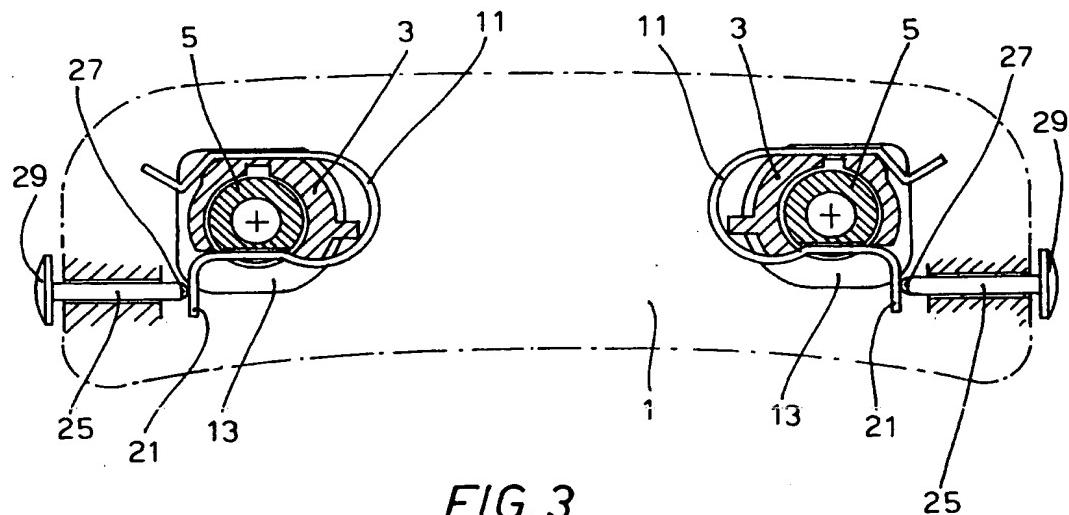


FIG. 3

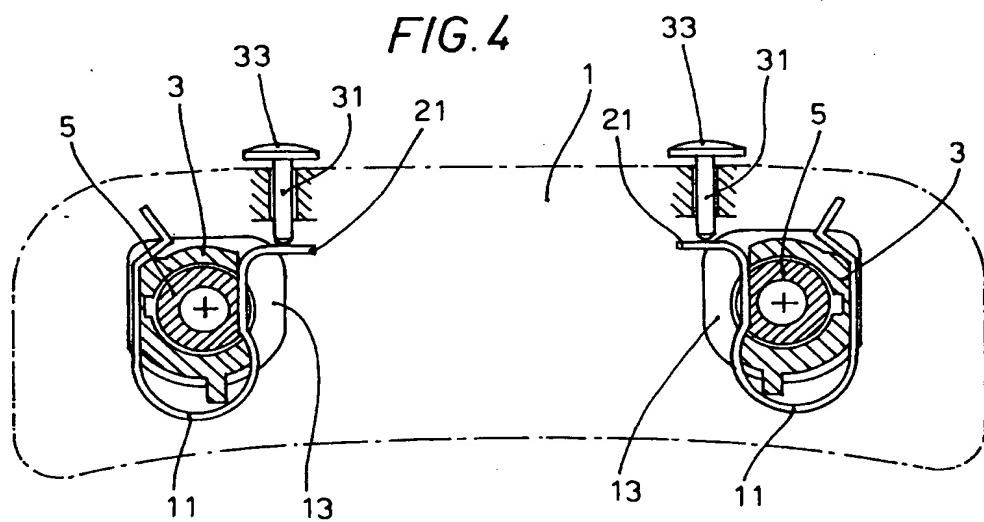


FIG. 4



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## EUROPEAN SEARCH REPORT

Application Number  
EP 97 12 0310

DOCUMENTS CONSIDERED TO BE RELEVANT									
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)						
X	DE 296 13 073 U (SCHMIDT GMBH R) 19 September 1996 * page 14, line 1 - page 18, line 8; figures 1-15 *	1	B60N2/48						
X	US 4 671 573 A (NEMOTO AKIRA ET AL) 9 June 1987 * column 3, line 36 - column 4, line 64; figures 1-9E *	1							
A	EP 0 603 136 A (BRUZOLO MANIFATT GESTIND MB) 22 June 1994 ---								
A	EP 0 744 316 A (BOURBON AUTOMOBILE SA) 27 November 1996 ---								
A	FR 2 597 813 A (FIAT AUTO SPA) 30 October 1987 ---								
A	FR 2 606 345 A (CHAUVET PIERRE) 13 May 1988 -----								
TECHNICAL FIELDS SEARCHED (Int.Cl.6)									
B60N									
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>26 June 1998</td> <td>Horvath, R</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	26 June 1998	Horvath, R
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<small>EPO FORM 1503/02 (Pac01)</small>									